

Preliminary Consultant's Recommendations

Introduction

The following discussion represents preliminary recommendations by Consultant Team for consideration by the Study Advisory Committee along with the reasons for their recommendation. The recommendations are presented for discussion purposes and to help formulate the Committee's Recommendations. They have been developed in response to Committee discussions over the past several meetings, but are not intended to limit Committee recommendations in any way. Other Alternatives that were discussed by the Committee are not recommended for several reasons; including feasibility, noise reduction potential, issues associated with legality, and financial considerations. It is also anticipated that implementation of these recommendations will likely take approximately five to eight years, depending upon King County and FAA funding/budgetary considerations and Federal policy.

Recommendations

Alternative A2. Implement a complete Stage 2 jet restriction at night between the hours of 10 PM and 7 AM.

Reasons for Recommendation:

If implemented, this alternative would include jets (primarily private business jets) under 75,000 pounds and would require completion of a Part 161 study. Implementation of this alternative would reduce the number of people within the 65 DNL by approximately 1,100 as compared to the Future Base Case.

Although preparing a Part 161 document is a time consuming and potentially frustrating task, there is some evidence nationally that it may be possible to ultimately succeed for an action focused on aircraft less than 75,000 pounds. No

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Part 161 Study has, to date, has been approved by the FAA; however, a well-constructed and technically strong document may potentially be viable.

It is important to note that since this alternative would only apply to Stage 2 aircraft and not to Stage 3, no formal approval from FAA is required under the Part 161 regulation. However, very detailed FAA reviews and objections to similar studies at other airports can offer a glimpse of what might be expected at KCIA if King County goes forward with this recommendation.

In any case, it is certain that Part 161 has not been written with the intent to be easily followed or implemented. FAA has been clear that they do not favor access restrictions, and that, on the contrary, they do not support noise restrictions that adversely affect airport/airfield capacity and efficiency.

Naples Florida has recently been attempting to adopt a somewhat similar regulation to the one recommended here. Their proposal is a full (24-hour) ban on Stage 2 aircraft. In that case, FAA has raised serious objections to the airport's proposal, and has threatened withdrawal of federal funds if the airport implements its ban.

FAA objections to the Naples proposal to date have included:

- Absence of benefit within the 65 DNL, (the Naples rule is targeted at areas within the 60 DNL)
- Lack of local land use protections against residential encroachment
- Conflicts between the proposed noise rule and FAA Grant Assurances. Grant assurances are contracts airports make with FAA in exchange for federal funds. FAA's position is that access restrictions focused on benefits beyond the 65 DNL are a violation of Grant Assurances.

The implications of FAA raising the question of Grant Assurances are several:

- Naples is the first instance where FAA has raised Grant Assurances as the primary objection to a Part 161 access restriction.
- Consistency with Grant Assurances, however that is interpreted, may be tantamount to an FAA approval power over a Stage 2 access restriction by means of a different mechanism than is outlined in the Part 161 regulations.
- If a Part 161 is recommended for KCIA, a careful review of grants and their assurances would be necessary.
- If any recommended program at KCIA can be demonstrated to benefit areas within 65 DNL, the Naples Grant Assurance objection may not apply.

According to the data prepared for this Part 150 Study, the benefits within 65 DNL of a Stage 2 restriction at night are a reduction in impact on 317 residences

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and approximately 1,100 people. In addition this alternative would reduce impact on approximately 84 residences and over 330 people within the 70 DNL contour.

There is a strong argument to be made regarding the purpose of such a restriction. Unlike Stage 2 aircraft over 75,000 lbs., which have been phased-out as a result of the Airport Noise and Capacity Act (ANCA), these smaller aircraft are free to operate for an unlimited period of time. The absence of any federal regulation on this point arguably leaves room for local action. And, the consultant recommendation proposes to focus the limit within nighttime hours, such that relief might be provided when residents are most easily disturbed, but does not inhibit the daily commerce of the facility.

Alternative A4. Sound attenuate residences within the KCIA 65 DNL contour.

Reasons for Recommendation:

One of the most common land use mitigation measures around airports is sound attenuation of residences at high noise levels. FAA defines significant noise levels to be exposure to sound above 65 DNL. Federal money is available for residential sound attenuation, which generally involves replacement of windows and doors and occasionally other acoustic treatments, depending on the severity of the noise exposure of the residence.

Individual airports approach the implementation of insulation programs differently. For example, some airports begin with houses in the highest contour levels (greatest noise exposure insulated first) and work outwards over time as funds become available. Other airports use random selection such as lotteries to choose homes for treatment. Still other airports do not conduct the insulation themselves, but either delegate it to local municipalities or to the residents themselves to choose from a pre-selected group of approved contractors. In all cases, the FAA has established certain acoustic standards which must be met upon completion of the insulation.

For estimation purposes, the cost of sound attenuation for residences within the 65 DNL was assumed to be \$30,000 per house. There are approximately 1,955 houses expected to be in the Future Base Case 65 DNL contour, so the total sound insulation project cost would be about \$59 million.

It is important to note that in exchange for participation in an insulation program, the County would be required by State law to receive an easement from the owner of the property. State law prevents a public entity from funding programs, such as insulation, unless the public agency receives something in exchange for the funding. Terms of the easement typically specify the extent of the noise impact and enable continuation of the noise at that or lower noise levels.

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Alternative A4. Sound attenuate residences with the combined KCIA/SEA 65 DNL contour.

Reasons for Recommendation:

One of the unusual, perhaps unique, features of KCIA is its close proximity to Sea-Tac International Airport to the south. The two facilities are so close that their noise contours actually overlap. This Part 150 Study has taken the unusual analytical step of creating a combined contour for both airports. The purpose of this exercise is to define areas, which would not fall into either airport's individual 65 DNL contour, but which are exposed to 65 DNL when the noise levels from both airports are considered together.

This is an important analysis, because the two airports are orchestrated together from an air traffic standpoint; that is they are operated in tandem – both either in north or south flow. Thus, from a “real world” perspective, people on the ground are exposed to the combined noise levels of both airports simultaneously. As a result, the combined noise contour is a reflection of noise levels as they are actually experienced.

For this reason, the area within the combined KCIA/Sea-Tac 65 DNL contour should be eligible for federal noise attenuation funds. However, applying for federal sound insulation program funds using a combined contour would be a precedent setting action. Generally grants are given to a single airport for mitigation of its own impacts. The nature of a federal application, if this recommendation is adopted, would need to be determined. In all probability, some cooperative effort with the Port of Seattle (owner and operator of Sea-Tac) would be required.

For estimation purposes, this program would be expected to include 2,642 homes at a cost of \$30,000 each for a total of about \$79 Million.

Alternative A4. Sound attenuate schools within the combined 65 DNL contour.

Reasons for Recommendation:

Schools are eligible for Federal funding for sound attenuation as studies have shown that excessive noise levels can impact the learning process. There are three schools within the combined 65 DNL contour which are not within the 65 DNL contour generated by aircraft using Sea-Tac Airport. These are St. Georges School, Maple Elementary and Cleveland. It is estimated that the cost to sound attenuate these schools would be approximately \$11 Million.

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Alternative A4. Establish a Sales Transaction program for residents wishing to sell their homes within the KCIA 65 DNL contour.

Reasons for Recommendation:

Some residents within the airport environs may not desire to take advantage of the sound attenuation program and may desire to sell their houses. The Sales Assistance program is intended to provide those residents with an opportunity to sell their homes at fair market value. The program is designed so that the homeowner puts the home on the market at fair market value. If the home does not sell within the average time limit that homes in the immediate area sell, then the selling price is reduced a certain percentage and is put on the market again. This process is continued until the home sells. The Airport makes up the difference in the original sales price and the actual sale price. Prior to closing, an avigation easement is placed on the property.

This program keeps neighborhoods intact, does not force people to sell who do not desire to sell, the Airport never takes title to the property, the seller receives fair market value for the residence, and buyers purchase the property with full knowledge of the airport and the avigation easement.

The estimated cost of this Recommendation is not known, as it is impossible to determine how many homeowners would want to take advantage of this program.

Alternative A4. Purchase avigation (noise) easements from residents wishing to sell such easements within the KCIA 65 DNL contour.

Reasons for Recommendation:

This Recommendation is similar to the previous Recommendation, as some residents may not want to take advantage of the sound attenuation program but still may wish to remain in their homes. This program would purchase outright an avigation (noise) easement from the homeowner. The value of such an easement would be determined through the appraisal process (usually between \$2,000 and \$4,500) and paid directly to the homeowner. The homeowners can then use the payment for whatever they desire. The easement is recorded and is attached to the title. Some homeowners prefer this program because they like their homes and do not necessarily want contractors making changes to them.

The estimated cost for this is unknown because it cannot be determined at this time how many residents would want to participate and what the value of the easement may be. This is not dependent upon any other recommendation.

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Alternative A8. Implement the Close-in Departure Procedure for Northern Departures.

Reasons for Recommendation:

Analysis of this alternative indicates that there would be some benefit from adopting the close-in departure in the north flow condition only. The reason for this recommendation is that the close-in communities directly north of the airport, specifically Georgetown would benefit from the power reduction. When the power is reapplied later, the aircraft generally would have traveled on to industrial areas along the Duwamish or over Elliott Bay.

In south flow conditions, however, the situation is different. There is no community as close to the airport to the south as Georgetown is to the north to gain the benefit of the noise reduction from a power cutback. On the other hand, the reapplication of power would largely occur over residential areas mostly in Tukwila.

This alternative would reduce single event overflight noise by about 2 to 3 dB in Georgetown for older manufactured as Stage 2 aircraft, which have been retrofitted to meet Stage 3 standards. Newer aircraft types climb fast enough that they are generally already higher than the 800' where the power cutback would occur when they pass over Georgetown.

Alternative A3. Initiate a Site Selection Feasibility Study for a Ground Run-up Enclosure, to address such issues as placement, actual use and projected use, and value of reduction vs. cost of GRE.

Reasons for Recommendation:

The question of whether a GRE would be a viable and valuable investment for KCIA has been discussed for some time. And, run-ups are a continuing source of neighborhood irritation. However, whether this particular recommendation is worthy of implementation rests on the answers to several technical and financial questions. So, to put the GRE issue in its full context; that is how it would work as well as how its benefits would compare to other possible actions, a Site Selection Feasibility Study is necessary.

The viability of a GRE at KCIA is dependent on locating a site, which meets the following criteria at a minimum. A GRE must be:

- Accessible by aircraft via taxiway and/or apron sufficient for aircraft weight
- Consistent with FAA safety criteria for on airfield buildings. The structure must not act as an obstruction or hazard.

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- Able to accommodate all or most of the aircraft types likely to be conducting run-ups at the airport
- Oriented favorably towards the wind, so that the benefits of the facility are not counteracted by meteorological conditions
- Designed to be effective in northwest high humidity conditions.

In addition to the physical parameters necessary to design an effective GRE, the airport must identify a source of funds to finance the facility. Locating and building a GRE can cost in the range of \$3 to 6 million. This cost would be evaluated from the perspective of how many aircraft would use the facility on an annual basis, and what the resulting cost benefit would be compared to other actions the airport might take to reduce noise.

This recommendation would cause the airport to initiate a site selection study to answer these and similar questions leading to the ability to make an informed decision on the desirability of constructing a GRE.

Alternative A3. Initiate a Site Feasibility Study to Construct a Noise Barrier on the North End of Airport.

Reasons for Recommendation:

One alternative, which has the potential to reduce noise in neighborhoods directly adjoining the airport, is construction of a noise wall or barrier northwest of the Boeing ramp at a height of between 20 and 25 feet. Benefits of a barrier can be significant if the barrier is properly placed and high enough to break the line of sight between the noise source, aircraft engines, and the noise receptors, close by residences.

Barriers can reduce noise for receptors close to them, but they decrease in effectiveness with distance, so that houses far from the wall would receive a diminishing benefit. Also, barriers have no effect on noise from aircraft in flight, because once the aircraft leaves the ground, the noise source becomes higher than the barrier.

From a practical perspective, a noise barrier analysis would involve determining the correct placement, length and height of a proposed barrier, and then reviewing those parameters to see if a wall of those proportions in that location would meet FAA safety criteria governing obstructions. Clearly large, non-frangible masses on an airport can be a danger of improperly located.

The benefit of this alternative would be about 5dB for the closest homes in Georgetown to about 3 dB for homes at a distance of roughly half a mile. This reduction would be for a single aircraft taxiing or idling event.

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Alternative A8 and A9. Implement technology that allows for more precise approach ground tracks over the water as it becomes available. Be a pilot site for the development of the technology and air traffic procedures necessary to support new approach technology.

Alternative A8. Develop an FMS Departure Route through Elliot Bay.

Reasons for Recommendation:

Developing an FMS/GPS departure through Elliott Bay has the potential to direct aircraft more accurately over the center of the water body thus avoiding residential areas in West Seattle and Magnolia. Analysis shows that just over 600 people would be expected to benefit from this procedure within 65 DNL, and many more would benefit at lower annual average noise levels.

For such an FMS/GPS procedure to work, several steps are necessary:

- FAA Control Tower develops and approves the procedure
- FAA assigns the procedure to departing aircraft depending on weather, air traffic volumes and other operating parameters (such as avoiding conflict with Sea-Tac traffic)
- Aircraft receiving the instruction must also be equipped with the appropriate cockpit technology
- Pilot follows the instruction.

It is unclear how many aircraft operating at KCIA are equipped with the necessary cockpit avionics, but part of the implementation of this alternative would be to ascertain what percentage of flights operating here could take advantage of the procedure. Newer aircraft will be GPS/FMS equipped, but the availability on other aircraft would require some research.

Alternative A9. Fully implement use of Charted Visual Approach Through Elliot Bay.

Reasons for Recommendation:

The Charted Visual Approach would direct aircraft on a curved arrival path through Elliott Bay on a south flow arrival. This curved approach, if implemented, could reduce noise levels over Queen Anne and Magnolia. Analysis indicates that this alternative would result in about 600 fewer people within 65 DNL as compared to the future Base Case condition.

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Being a visual procedure, this approach would only be used in “fair weather” conditions when pilots are able to see both the airport and other traffic. As a result, analysis assumed that the procedure might be used 50% of the time.

At present the FAA is in process of testing and evaluating this procedure. There can be no final recommendation until their work is complete. FAA must decide whether this approach can be implemented, and if so, under which weather conditions. For purposes of this Part 150 Study, the Charted Visual Approach offers sufficient possible benefit to merit remaining as an alternative until FAA has determined its feasibility.

Alternative A5 and A6. Develop a Fly Quiet Program with Enhanced Noise and Compliance Monitoring.

Reasons for Recommendation:

KCIA staff has indicated that it wishes to change the character of its Complaint Response System from one of reaction to specific incidents to a community resource program providing regular information on a variety of noise abatement topics. Using the data gathered by the noise monitoring system, which may be supplemented from time to time by information from portable noise monitors and/or from the Sea-Tac Noise Monitoring System, KCIA would regularly report on compliance with some of the recommendations resulting from this study.

At present complaints are treated on an individual basis with each caller receiving a post card indicating that the complaint has been received, followed by a letter outlining the results of the staff research on the individual incident.

The proposed method would be to supplement these individual responses with regular quarterly reports describing the nature of activity at the airport as well as overall trends. Examples of such reports might be:

Operations Summary containing:

- Number of total flights
- Number of night flights
- Percentage scheduled vs. unscheduled flights
- Percentage jet vs. non jet flights

Noise Level Report containing:

- Noise Levels at each of the four monitors
- Trend reports compared to previous quarter and previous year when sufficient data is available
- Identification of the five or ten noisiest flights over the period

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Fly Quiet Reports tracking:

- Adherence to flight tracks through Elliott Bay
- Use of the Charted Visual Approach
- Effective implementation of the close in noise abatement departure procedure for north bound flights

Special Reports as needed such as:

- Noise levels in a particular community or at a specific residence
- Analysis of flight tracks over a residential area such as Magnolia or West Seattle
- Analysis of nighttime run-up noise

Developing a Fly Quiet Program

The value of Fly Quiet at KCIA is that it offers the airport the ability to measure, compare, in some cases affect, and reward pilot performance in executing the new noise abatement procedures that may result from this study. Using noise and flight track data from the noise monitoring system, some new software and a little new equipment, airport staff would be able to identify all KCIA flights by means of the N Number, or aircraft registration. FAA keeps a database of all N Numbers including information on who owns and operates each aircraft. By this method, KCIA staff would be able to clearly see which operators are already “Quiet Flyers” and who may require additional training or information. Using this data, airport staff would be able to meet regularly with Fixed Base Operators and pilots to provide additional noise abatement training and reinforce the Fly Quiet procedures and methods.

The specific details concerning how flights and pilots are rated would be determined once the study is complete and a Fly Quiet program is formally adopted. But, the likelihood is that quantities of noise and flight track data would be analyzed to determine both the best and worst performers in each Fly Quiet category (e.g. adherence to flight tracks, close-in departure procedure, etc.). Clearly emphasis would be on aircraft operators either based at KCIA or using the airport regularly, as that is where repetitive data would be available. Also, there may be an effort to categorize large transport category aircraft and smaller aircraft separately, as their operating characteristics and flight procedures differ considerably.

A Fly Quiet program would offer airport staff and community residents the data and the opportunity to evaluate how effectively noise abatement programs are being implemented. In addition, Fly Quiet creates an positive interactive relationship between the airport, its Fixed Based Operators, airlines and pilots. Fly Quiet is a framework within which all these parties can review past

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performance and compare their successes with those of others. Most importantly, Fly Quiet offers the airport the ability to reward the best performers through incentives, positive publicity, and similar activities.

Quarterly Noise Abatement Reports would be published by the airport and distributed through newsletters, the airport web page and at regular SAC and Roundtable meetings. Fly Quiet Reports would be distributed even more broadly. By means of press releases, KCIA would announce the Quiet Flyer awards for the year, so that operators who achieve this distinction would be properly rewarded with favorable publicity. An annual Quiet Flyer Award ceremony would be scheduled and publicized where a dignitary would confer the honor on the recipients with appropriate fanfare. Additionally, winners may receive some tangible prize such as a gift certificate to a local area business.

Alternative A10. Develop and implement Building Design Standards/Placement to Reduce/Contain Noise on the airport.

Reasons for Recommendation:

If noise abatement is a consideration during design, certain perimeter airport buildings can act as noise barriers between aircraft operations and surrounding neighborhoods. Similar to the discussion in alternative A3, a noise barrier on the north side of the airport, buildings can act as a shield if they are properly situated, the height is sufficient, and there are no gaps through which noise can pass. This alternative would allow KCIA to develop the proper standards, so that any new construction on the airport would be designed to maximize noise abatement potential.

Alternative A3. Maintain Existing Run-up Restrictions.

Reasons for Recommendation

The major reason for this recommendation is to preserve the benefits of the existing regulation, especially at night. At present KCIA restricts run-ups between 10 PM and 7 AM. This nighttime restriction on run-ups would be continued for the future. If in the future a Ground Run-up Enclosure were constructed at KCIA, and, as a result, the surrounding communities were shielded from run-up noise, then this nighttime restriction might be revisited.

The two locations currently identified for maintenance run-ups would continue again until such time as a GRE might be constructed.

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